2017 Spring Electrofishing (SEII) Summary Report

Brekke Lake (WBIC 183000)

Waupaca County

Introduction and Survey Objectives

In 2017, the Department of Natural Resources conducted a one night boomshocking survey of Brekke Lake in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey were to characterize species composition, relative abundance, and size structure. The following report is a brief summary of that survey, the general status of the fish populations and future management options for Brekke Lake.

Acres: 46 Shoreline Miles: 1.3 Maximum Depth (feet): 25
Lake Type: Seepage Public Access: One Public Boat Launch
Regulations: 14-18" protected slot limit on largemouth and smallmouth bass with a daily bag limit of 3 with only 1 over 18".

WISCONSIN DNR CONTACT INFO.

Jason Breeggemann - Fisheries Biologist
Elliot Hoffman - Fisheries Technician
Wisconsin Dept. of Natural Resources
647 Lakeland Rd.
Shawano, WI 54166

Jason Breeggemann phone and email:715-526-4227; jason.breeggemann@wisconsin.gov

Elliot Hoffman phone and email: 715-526-4231; elliot.hoffman@wisconsin.gov

Survey Information

Site location	Survey Date	Water Temp. (°F)	Target Species	Total Miles Shocked	Number of Stations	Gear	Number of Netters
Brekke Lake	5/23/2017	56	All	1.14	3	Boomshocker	2

Fish Metric Descriptions
PSD, CPUE, and LFD

Proportional Stock Density (PSD) is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per mile of shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Length frequency distribution (LFD) is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Survey Method

- Brekke Lake was sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period was to count and measure adult bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- The entire shoreline was sampled with a boomshocker. All fish captured were identified to species and gamefish and panfish were measured for length. All gamefish were weighed as part of this survey.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, and length frequency distributions.

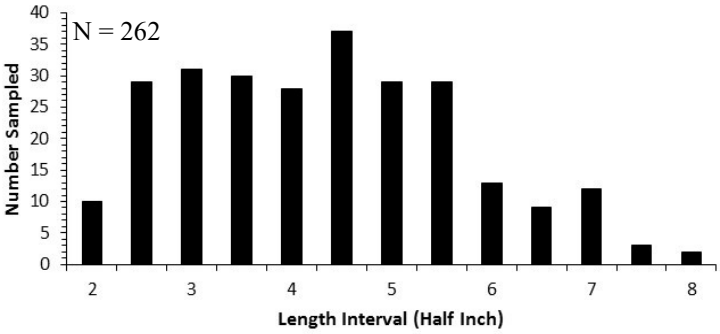
Size Structure Metrics

Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
BLUEGILL	262	4.6	2.2 - 8.1	3.0 and 6.0	223	39	17	32	Low
BLACK CRAPPIE	24	9.3	5.2 - 12.0	5.0 and 8.0	24	22	92	91	High
LARGEMOUTH BASS	90	9.3	3.9 - 18.9	8.0 and 12.0	43	20	47	39	Moderate
PUMPKINSEED	71	5.3	3.3 - 7.7	3.0 and 6.0	70	21	30	57	Moderate

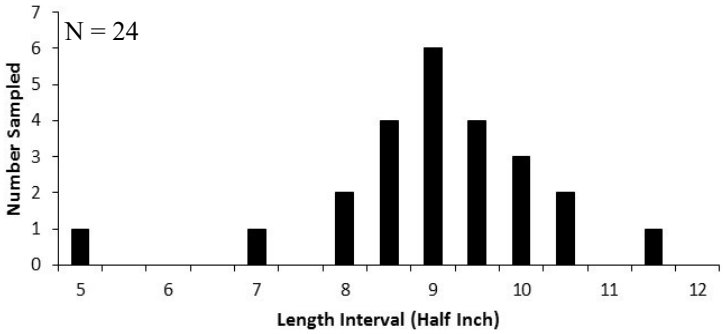
Abundance Metrics

Species	CPUE Total (number per mile)	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE	Length Index Percentile Rank	Length Index Abundance Rating
BLUEGILL	262.0	86	High	≥ 7.0 inches	17.0	75	Moderate-High
BLACK CRAPPIE	24.0	81	High	≥ 10.0 inches	6.0	96	Very High
LARGEMOUTH BASS	78.9	93	High	≥ 14.0 inches	14.0	94	High
PUMPKINSEED	71.0	96	Very High	≥ 7.0 inches	9.0	95	Very High

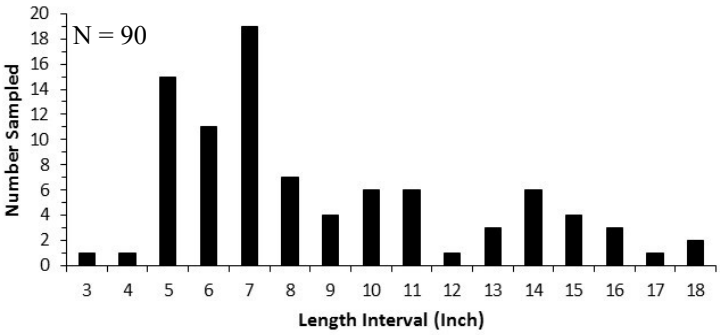
Bluegill Length Frequency



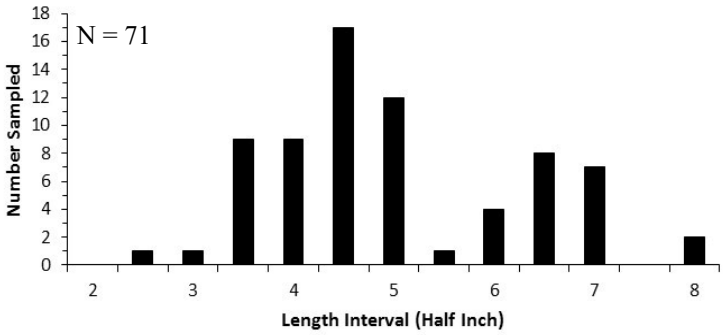
Black Crappie Length Frequency



Largemouth Bass Length Frequency



Pumpkinseed Length Frequency



Summary

- A total of 470 fish from seven species were collected during our survey. The most frequently encountered and common species were bluegill (262), largemouth bass (90), and pumpkinseed (71).
- Other fish species sampled in lower abundance included black crappie (24), green sunfish (10), yellow perch (9), and northern pike (4).
- All fish captured were native species.
- Largemouth Bass was the dominant gamefish captured in our survey. Size structure was at moderate levels whereas abundance was at high levels with half of the largemouth bass sampled being between 5 - 8 inches. The largest bass sampled was just under 19 inches.
- Only four northern pike were captured during electrofishing. However, fyke netting would be a more appropriate sampling gear to assess the northern pike population.
- Panfish populations were comprised of bluegill, pumpkinseed, black crappie, and green sunfish.
- The bluegill population was dominated by smaller individuals as indicated by the low PSD. Additionally, results from a 2016 survey showed bluegill growth was slow, likely due the high density. Despite the high density and slow growth, harvestable size bluegills >6 inches, and as large as 8.1 inches, were sampled.
- Historically, Brekke lake has had a great black crappie fishery. Results from this survey shows that Brekke Lake continues to have a great black crappie fishery with a high density of harvestable size crappies present.
- Brekke Lake also supports a high density of pumpkinseeds with 30% sampled being harvestable size or >6 inches.

Management Options

This survey was primarily intended to assess largemouth bass and panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations are focused on bass and panfish.

Largemouth Bass

- Largemouth bass density in 2017 was high. The density in 2017 was also much higher than other spring surveys that have taken place since the special regulation was put in place in 1999 to reduce the density of largemouth bass and improve growth. For example, largemouth bass CPUE in 2009 was 40.5 bass per mile, almost half of what was observed in 2017. However, 50% of the largemouth bass sampled in 2017 were likely from one young year class of bass between 5 - 8 inches long. The 2017 survey shows that the protected slot limit is still working as many largemouth bass have grown into the protected size limit and some are growing to sizes >18 inches.
- In 2018, the largemouth bass regulation will change to: Only largemouth or smallmouth bass less than 14” may be kept, except one fish may be over 18”. This will change the daily bag limit from three to five and allow for additional harvest of largemouth bass. It is hoped that this will help reduce the density of small largemouth bass and, as a result, growth will increase, resulting in more larger bass in the population.

Panfish

- Bluegill densities were high and have more than doubled since the spring electrofishing survey in 2009, when densities were only 100 per mile of electrofishing. Maintaining a high density of large predators (e.g., largemouth bass and northern pike) will be the most effective way to lower bluegill densities and improve growth. The protected slot limit should ensure a largemouth bass population with a significant number of larger individuals that can effectively forage on bluegills.